REMARKS/ARGUMENTS

In the Office Action dated August 30, 2011 (hereinafter, "Office Action"), claims 58-63, 65-74, 76-85, 87-96, 98-105, 107-119 were rejected under 35 U.S.C. § 103(a). By this paper, claim 108 has been amended so that it depends from a pending claim rather than canceled claim 106. Claim 103 has been amended to correct for typographical errors. New claim 120 has been added.

Applicants respectfully respond to the Office Action.

I.   Rejection of Claims 58-59, 62-63, 66-68, 70, 73-74, 77-79, 81, 84-85, 88-90, 92, 95-96, 99-101, 103-104, and 108-118 Under 35 U.S.C. § 103(a)

Claims 58-59, 62-63, 66-68, 70, 73-74, 77-79, 81, 84-85, 88-90, 92, 95-96, 99-101,103-104, and 108-118 are rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent No. 5,533,094 Sanmugam (hereinafter "Sanmugam") in view of EP 1217855 A1 to Miah et al. (hereinafter "Miah"). Applicants respectfully request reconsideration in view of the following remarks.

The factual inquiries that are relevant in the determination of obviousness are determining the scope and contents of the prior art, ascertaining the differences between the prior art and the claims in issue, resolving the level of ordinary skill in the art, and evaluating evidence of secondary consideration. KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 406 (2007) (citing Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 17-18 (1966)). As the Board of Patent Appeals and Interferences has recently confirmed, "obviousness requires a suggestion of all limitations in a claim." In re Wada and Murphy, Appeal 2007-3733 (citing CFMT, Inc. v. Yieldup Intern. Corp., 349 F.3d 1333, 1342 (Fed. Cir. 2003)).

Independent claim 58 recites a "system for distributed packet-based paging" that includes "a plurality of access nodes configured to provide paging messages." Claim 58 additionally states that "each of the access nodes compris[es] a paging requirements determination module and a paging resource control module." More specifically, claim 58 indicates that each "access node" includes a "paging requirements determination module [that] is configured to receive and

analyze paging information to determine a level of quality of service" and a "paging requirements determination module [that] is configured to allocate paging resources and generate the corresponding paging message in accordance with the level of quality of service." As explained by the specification, this "distributed" system means that the access nodes themselves, rather than a centralized controller/node, perform the functionality of "analyz[ing] paging information to determine a level of quality of service for a corresponding paging message" and "generat[ing] the corresponding paging message in accordance with the level of quality of service. (See e.g., Specification, page 8 (stating that "[i]n centralized paging system design, both PRD [paging requirements determination] and PRC [paging resource control] functions may be centrally located in the core of the network infrastructure" whereas in a "distributed paging system design[,] both PRD and PRC functions may be located at the edge of the network infrastructure, e.g., in the access nodes."))

Both Sanmugam and Miah relate to "centralized" systems when the functionality associated with paging a mobile node is performed by a centralized controller rather than an access node. For example, Sanmugam teaches a "centralized" paging system in which all of the paging determinations (such as the determinations related to quality of service) are made upstream of the base stations (access points). According to the disclosure of Sanmugam, various mobile stations may be allotted various classes of service when they are being paged. (See Sanmugam, col. 7., lines 8-15.) To improve the page response rate, Sanmugam defines the relative importance of various page attempts, e,g., according to the classes of service, so that incoming page requests receive paging service in accordance with their relative importance. (See Sanmugam, col. 8 lines 1-9.) The assignment of paging priorities may be based in part on page request characteristics. (See Sanmugam, col. 9 lines 1-2.)

However, in performing this analysis of paging, Sanmugan expressly teaches:

> The page request and its associated paging parameters proceeds **to node 253 where the paging parameters are combined with the subscriber characteristics, such as subscriber priority, and becomes a page attempt** which is transmitted to the [Mobile Switching Center] **MSC 254** and placed in the paging buffers associated with the

> appropriate location areas. There is one buffer for each location area. The <u>MSC 254 then transmits the page attempt from each of the appropriate buffers to their associated location areas 260</u> within the region being paged.

(Sanmugam, col. 13, lines 14-22.) It should be noted that both the node 253 and the mobile switching center 254 are <u>upstream</u> of the base stations 256, as clearly shown in Figure 9 of Sanmugam. The node 253 and mobile switching center 254 are not base stations 256 that are distributed throughout the area. Sanmugam teaches that the "determinat[ion] of paging requirement" (which involves subscriber priority and/or quality of service) occurs in **node 253** (before such signals even reach the MSC 254 or the BS 256). Accordingly, Applicants respectfully submit that the functionality of "determin[ing] a level of quality of service" and "allocat[ing] paging resources and generat[ing] the corresponding paging message in accordance with the level of quality of service" is not occurring <u>within "**an access node**"</u> as required by claim 58, but is instead occurring (if at all) upstream of the BS 256.

Further, Sanmugam teaches that "paging orders are transmitted towards the base stations **carrying the associated paging priorities**" and that a "**particular buffer is selected** depending on the least significant bit of the identification number (even or odd) of the mobile stations being paged." (Sanmugam, col. 12, lines 29-40.) Thus, Sanmugam simply indicates that paging orders, which already have the paging priorities that were previously determined upstream by the node 253, may be sent "towards the base stations" and that the base station may "select[]" a "particular buffer" based upon a "bit of the identification number." (<u>Id.</u>) However, this does not indicate that the base stations 256 are actually making decisions regarding paging priority, "determin[ing] a level of quality of service," or "allocat[ing] paging resources." Instead, this merely indicates that the paging priorities (based upon the quality of service) are already determined *before* (upstream) they are forwarded to the base stations 256.

Thus, there is no teaching or suggestion in Sanmugam of a base station (access node) that includes a "paging requirements determination module [that] is configured to receive and analyze paging information to determine a level of quality of service" and a "paging

requirements determination module [that] is configured to allocate paging resources and generate the corresponding paging message in accordance with the level of quality of service." Such a base station is simply not taught by Sanmugam's centralized system, which has node 253 determine the paging priorities. In fact, Applicants submit that Sanmugam represents one example of a "centralized paging system" outlined in Applicants' specification in which the "PRD [paging requirements determination] and PRC [paging resource control] functions may be centrally located in the core of the network infrastructure [e.g., at upstream node 253]." (Specification, page 8.) Accordingly, Sanmugam does not teach or suggest the subject matter of claim 58.

Miah also discloses a centralized paging system similar to the one in Sanmugam. In Miah, a radio network controller (RNC) includes a paging message construction unit that constructs and prioritizes paging messages. (See Miah, paragraphs [0012] and [0016].) These paging messages are thereby provided to a buffer unit that provides the messages to the Node B, which then broadcasts the paging messages. (See id.) Thus, Miah also fails to disclose an access node (e.g. a base station) having a paging requirements determination module that determines paging requirements in the manner outlined by the claim.

Thus, in summary, Applicants submit that the cited references (Sanmugam and Miah) each describe a "centralized" paging system where incoming paging requests are processed by a centralized node (node 253 in Sanmugam or the RNC in Miah) before these paging requests are sent to the base station(s). In fact, in these references, the base station only operates to buffer (store) and/or broadcast the paging requests. These references do not teach or suggest an access node that "analyze[s] paging information to determine a level of quality of service" and "generate[s] the corresponding paging message in accordance with the level of quality of service" **at the access node**.

Rather than address the express teachings of Miah and Sanmugam, the Office Action simply indicates that Applicants are "attacking [the] references individually" and that "Applicant has failed to interpret and appreciate the combined teachings of well-known prior art Sanmugam and Miah that clearly discloses the claimed feature(s) as would be clearly recognized by one of

ordinary skill in the art." (Office Action, page 25.) Applicants respectfully disagree. First, Applicants are not "attacking [the] references individually" but are simply pointing out the express teachings of the references and how such teachings do not support the positions outlined in the Office Action. Second, with respect to the Office Action's contention that "Applicant has failed to interpret and appreciate the combined teachings of well-known prior art Sanmugam and Miah that clearly discloses the claimed feature(s) as would be clearly recognized by one of ordinary skill in the art," this statement is conclusory and simply asserts that a skilled artisan would believe that the references teach the claim subject matter. However, there is no evidence that a skilled artisan would ignore the references' express teachings of "centralized" paging systems, nor is there any evidence that a skilled artisan would make the "recogni[tion]" asserted in the Office Action.

For at least the foregoing reasons, Applicant respectfully submits that amended claim 1 is allowable.

Independent claim 59 recites an "access node" that includes a "paging requirements determination module" and " a paging resource control module, wherein the paging requirements determination module is configured to receive and analyze paging information to determine a level of quality of service of a corresponding paging message" and "the paging resource control module is configured to allocate paging resources and generate the corresponding paging message in accordance with the level of quality of service." As discussed above, the combination of cited references does not teach or suggest this claimed subject matter. Accordingly, Applicants respectfully submit that claim 59 is allowable. Claims 62-63, 66-68 and 109 depend from claim 59, and are therefore allowable for at least the same reasons as claim 59.

Independent claim 70 recites "determining a level of quality of service for a paging message by receiving and analyzing paging information at a paging requirements determination module within an access node" and "allocating paging resources and generating the paging message from a paging resource control module within the access node in accordance with the level of quality of service determined by the paging requirements determination module." As discussed above, the combination of cited references does not teach or suggest this claimed

subject matter. Accordingly, Applicants respectfully submit that claim 70 is allowable. Claims 73-74, 77-79 and 110 depend from claim 70, and are therefore allowable for at least the same reasons as claim 70.

Claim 110 further recites "exchanging paging information <u>between a plurality of access nodes.</u>" Claim 110 also recites "determining the level of quality of service at least in part (i) from analyzing at least one of a header field or a payload field, using a packet classification technique, from a received data message and (ii) from stored information uniquely associated with the access node in which the paging requirements determination module resides." Sanmugan does not teach or suggest that the base stations 256 are "exchanging paging information between themselves." While Sanmugan does teach that the MSC sends paging information to a base station 256 (so that this information may be buffered at the base station, as explained above), there is no indication that the base stations are indeed exchanging such information. Accordingly, this claim is further allowable over Sanmugan and Miah.

Independent claim 81 recites a computer readable medium that includes instructions for "determining, at the paging requirements determination module in the access node, a level of quality of service for a paging message in accordance with the paging information" and "allocating paging resources and generating the paging message at a paging resource control module in the access node, in accordance with the level of quality of service determined by the paging requirements determination module." As discussed above, the combination of cited references does not teach or suggest this claimed subject matter. Accordingly, Applicants respectfully submit that amended claim 81 is allowable. Claims 84-85, 88-90 and 111 depend from claim 81, and are therefore allowable for at least the same reasons as claim 81.

Independent claim 92 recites "means for receiving and analyzing paging information to determine a level of quality of service (QoS) for a paging message" and "means for allocating paging resources and generating the paging message in accordance with the level of quality of service determined by the means for receiving and analyzing the paging information." As discussed above, the combination of cited references does not teach or suggest this claimed subject matter. Accordingly, Applicants respectfully submit that amended claim 92 is allowable.

Claims 95-96, 99-101 and 112 depend from claim 92, and are therefore allowable for at least the same reasons as claim 92.

Independent claim 103 recites an "end node" including "means for receiving a first page from a first access node comprising a first paging resource control module … [that] is configured to allocate paging resources and generate the first page to the end node in accordance with a first level of quality of service" and "means for receiving a second page, different from the first page, from a second access node comprising a second paging resource control module … [that] is configured to allocate paging resources and generate the second page in accordance with a second level of quality of service." As discussed above, the combination of cited references does not teach or suggest this claimed subject matter. Accordingly, Applicants respectfully submit that amended claim 103 is allowable. Claims 113-115 depend from claim 103, and are therefore allowable for at least the same reasons as claim 103.

Independent claim 104 recites "receiving a first page from a first access node comprising a first paging resource control module … [that] is configured to allocate paging resources and generate the first page to the end node in accordance with a first level of quality of service" and "receiving a second page, different from the first page, from a second access node comprising a second paging resource control module … [that] is configured to allocate paging resources and generate the second page in accordance with a second level of quality of service determined based on the same paging information received by the second paging requirements determination module." As discussed above, the combination of cited references does not teach or suggest this claimed subject matter. Accordingly, Applicants respectfully submit that amended claim 104 is allowable. Claims 116-118 depend from claim 104, and are therefore allowable for at least the same reasons as claim 104.

II.   Rejection of Claims 60, 71, 82, 93 and 105 Under 35 U.S.C. § 103(a)

Claim 60, 71 82 93 and 105 stand rejected under 35 U.S.C. § 103(a) based on Sanmugam, in view of Miah and further in view of U.S. Patent No. 6,765,890 to Palat et al. (hereinafter "Palat"). Applicants respectfully request reconsideration in view of the following remarks.

Claim 60 depends from claim 59. Claim 71 depends from claim 70. Claim 82 depends from claim 81. Claim 93 depends from claim 92. Claim 105 depends from claim 103. As discussed above, Applicants respectfully submit that claims 59, 70, 81, 92 and 103 are allowable. Accordingly, Applicants respectfully submit that claims 60, 71, 82, 93 and 105 are allowable for at least the same reasons as presented above in connection with claims 59, 70, 81, 92 and 103, respectively.

III.   Rejection of Claims 61, 72, 83 and 94 Under 35 U.S.C. § 103(a)

Claim 61, 72, 83 and 94 stand rejected under 35 U.S.C. § 103(a) based on Sanmugam, in view of Miah and further in view of U.S. Patent No. 6,834,191 to Wallentin et al. (hereinafter "Wallentin"). Applicants respectfully request reconsideration in view of the following remarks.

Claim 61 depends from claim 59. Claim 72 depends from claim 70. Claim 83 depends from claim 81. Claim 94 depends from claim 92. As discussed above, Applicants respectfully submit that claims 59, 70, 81 and 92 are allowable. Accordingly, Applicants respectfully submit that claims 61, 72, 83 and 94 are allowable for at least the same reasons as presented above in connection with claims 59, 70, 81 and 92, respectively.

IV.   Rejection of Claims 65, 76, 87, 98 and 107 Under 35 U.S.C. § 103(a)

Claim 65, 76, 87, 98 and 107 stand rejected under 35 U.S.C. § 103(a) based on Sanmugam, in view of Miah and further in view of U.S. Patent No. 6,823,191 to Laroia et al. (hereinafter "Laroia"). Applicants respectfully request reconsideration in view of the following remarks.

Claim 65 depends from claim 59. Claim 76 depends from claim 70. Claim 87 depends from claim 81. Claim 98 depends from claim 92. Claim 107 depends from claim 103. As discussed above, Applicants respectfully submit that claims 59, 70, 81, 92 and 103 are allowable. Accordingly, Applicants respectfully submit that claims 65, 76, 87, 98 and 107 are allowable for at least the same reasons as presented above in connection with claims 59, 70, 81, 92 and 103, respectively.

V.   Rejection of Claims 69, 80, 91 and 102 Under 35 U.S.C. § 103(a)

Claim 69, 80, 91 and 102 stand rejected under 35 U.S.C. § 103(a) based on Sanmugam, in view of Miah and further in view of U.S. Patent No. 6,314,282 to Weber et al. (hereinafter "Weber"). Applicants respectfully request reconsideration in view of the following remarks.

Claim 69 depends from claim 59. Claim 80 depends from claim 70. Claim 91 depends from claim 81. Claim 102 depends from claim 92. As discussed above, Applicants respectfully submit that claims 59, 70, 81 and 92 are allowable. Accordingly, Applicants respectfully submit that claims 69, 80, 91 and 102 are allowable for at least the same reasons as presented above in connection with claims 59, 70, 81 and 92, respectively.

VI.   Rejection of Claim 119 Under 35 U.S.C. § 103(a)

Claim 119 stands rejected under 35 U.S.C. § 103(a) based on Sanmugam, in view of Miah and further in view of U.S. Patent No. 7,193,991 to Melpignano et al. (hereinafter "Melpignano"). Applicants respectfully request reconsideration in view of the following remarks.

Claim 119 depends from claim 70. As discussed above, Applicants respectfully submit that claim 70 is allowable. Accordingly, Applicants respectfully submit that claim 119 is allowable for at least the same reasons as presented above in connection with claim 70.

VII.   **New Claim 120**

By this paper, new claim 120 has been added. This claim depends from claim 58 and recites that "the paging requirement determination module determines the level or quality of service by matching IP datagrams received at the access node with specific paging requirements." Support for this claim subject matter is found on page 19 of the filed specification. As this claim depends from claim 58, this claim is allowable for the reasons set forth above. Further, Applicants cannot find any teaching in the cited references of determining a level of quality of service, at an access node, based upon IP datagrams that were received at the access node. Favorable consideration is respectfully requested.

CONCLUSION

In view of the foregoing, Applicants respectfully submit that all pending claims in the present application are in a condition for allowance, which is earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully submitted,

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